



TEST REPORT nr. R13031002

Federal Communication Commission (FCC)

Test item

Description.....: PNF1P-TG CONTROLLER USB PEN 125KHZ MULTITAG
Trademark.....: iDTRONIC
Model/Type: STICK-LF-ASS

Test Specification

Standard: FCC Rules & Regulations, Title 47 - Part 15.107 and Part 15.109:2011

Client's name: APROMIX S.r.l.

Address: Contrà San Giorgio, 148 – 36061 Bassano del Grappa (VI) – ITALY

Manufacturer's name : Same as client

Address: --

Report

Tested by: G. Gandini – Technician

Giovanni Gandini

Approved by: R. Beghetto – Laboratory Manager

R. Beghetto

Date of issue: 02.04.13

Contents.....: 17 pages

This test report shall not be reproduced except in full without the written approval of CMC.
The test results presented in this report relate only to the item tested.



Index

1.	SUMMARY.....	3
2.	DESCRIPTION OF EQUIPMENT UNDER TEST (EUT).....	4
2.1	TEST SITE	4
3.	TESTING AND SAMPLING	4
4.	OPERATIVE CONDITIONS.....	4
5.	PHOTOGRAPH(S) OF EUT	5
5.1	PHOTOGRAPH(S) OF SETUP	5
6.	EQUIPMENT LIST.....	6
7.	MEASUREMENT UNCERTAINTY	7
8.	REFERENCE DOCUMENTS.....	8
9.	DEVIATION FROM TEST SPECIFICATION.....	9
10.	TEST CASE VERDICTS.....	9
11.	RESULTS.....	9
11.1	CONTINUOUS DISTURBANCE VOLTAGE TEST (150 kHz – 30 MHz)	10
11.2	RADIATED DISTURBANCE TEST (30 – 1000 MHz)	14



1. Summary

Emission Test:

FCC Rules & Regulations, Title 47 - Part 15.107 and Part 15.109:2011

Test specifications	Environmental Phenomena	Port	Tests sequence	Result
Part 15.107	Continuous disturbance voltage	Mains terminal	2	Complies
Part 15.109	Radiated disturbance	Enclosure	1	Complies

The Test Report was given to the Client representatives for necessary documentation of ratification of the tested equipment and it is valid for the FCC certification.



2. Description of Equipment under test (EUT)

Power supply : From USB port
Power cable : Unshielded
Serial Number : --
Components list : Annex 1

2.1 Test Site

Company : CMC Centro Misure Compatibilità S.r.l.
Address : Via dell'Elettronica, 12/C
36016 Thiene (VI) – ITALY

3. Testing and sampling

Date of receipt of test item : 20.02.13
Testing start date : 01.03.13
Testing end date : 05.03.13
Samples tested nr. : 1
Sampling procedure. : Equipment used for testing was picked up by
the manufacturer, at the end of the production
process with random criterion
Internal identification : adhesive label with the product number
P130166

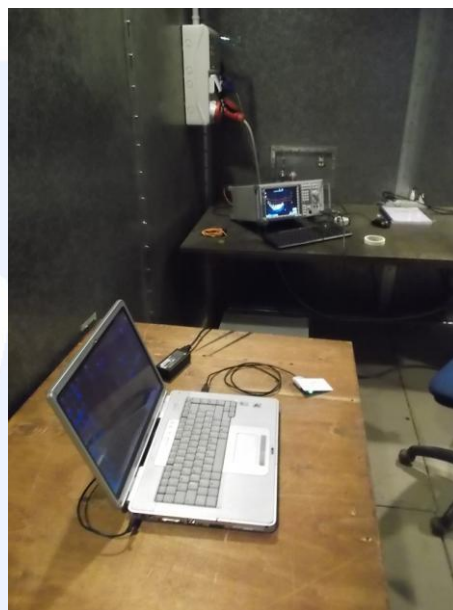
4. Operative conditions

EUT exercising : Steady condition, PC connected
Auxiliary equipment : None



5. Photograph(s) of EUT

5.1 Photograph(s) of setup





6. Equipment list

<i>Id. number</i>	<i>Manufacturer</i>	<i>Model</i>	<i>Description</i>	<i>Serial number</i>	<i>Last calibration</i>	<i>Due date calibration</i>
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses limiting device	---	January '13	January '14
CMC S108	Emco	3115	Horn antenna	9811-5622	June '10	June '13
CMC S136	Schwarzbeck	VULB 9136	Broadband Antenna	9136-205	April '11	April '14
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '13	January '14
CMC S200	Schwarzbeck	NSLK 8128	V-LISN	8128-273	January '13	January '14
CMC S206	Rohde & Schwarz	ESCI 7	EMC Receiver	100781	January '13	January '14
CMC A013	CMC	TR01	Rotary motorized table	---	---	---
CMC A014	CMC	PM01	Antenna positioning Mast	---	---	---



7. Measurement uncertainty

Test	Expanded Uncertainty	note
Conducted Emission		
(50Ω/50μH AMN) - (9 kHz – 150 kHz)	±3.4 dB	1
(50Ω/50μH AMN) - (150 kHz – 30 MHz)	±2.8 dB	1
(Voltage probe) - (150 kHz – 30 MHz)	±2.8 dB	1
(50Ω/5μH AMN) - (150 kHz – 108 MHz)	±2.4 dB	1
Discontinuous Conducted Emission		
Conducted Emission (50Ω/50μH AMN) - (150 kHz – 30 MHz)	±2.9 dB	1
Disturbance Power (30 MHz – 300 MHz)		
	±2.9 dB	1
Radiated Emission		
(0,150 MHz – 30 MHz)	±4.0 dB	1
(30 MHz – 1000 MHz)	±4.2 dB	1
(1 GHz – 6 GHz)	±3.4 dB	1
Electromagnetic field EMF		
	±15.0 %	1
Harmonic current emissions test		
	±2.5 %	1
Voltage fluctuation and flicker test		
	±4.1 %	1
Insertion loss test		
	±2.2 dB	1
Radiated electromagnetic disturbance test (loop antenna)		
	±1.7 dB	1
Radiated electromagnetic field immunity test		
	0.7 V/m at 3V/m	1
Pulse modulated radiated electromagnetic field immunity test		
	0.7 V/m at 3V/m	1
Injected currents immunity test		
	0.5 V at 3V	1
Bulk current		
	9.2 mA at 60 mA	1
Power frequency magnetic field immunity test		
	0.3 A/m at 3 A/m	1
Electrostatic discharge immunity test		
		2
Electrical fast transients / burst immunity test		
		2
Surge immunity test		
		2
Short interruption immunity test		
		2
Voltage transient emission test		
	±2.2 %	1
Transient immunity test		
		2

Notes

Note 1:

The expanded uncertainty reported according to EN55016-4-2(2004-10) is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of p = 95%

Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor k = 2.



8. Reference documents

Reference no.	Description
FCC Rules and Regulation Title 47 part 15:2011	--
Internal Procedure PM001 rev. 2.0 (Quality Manual)	Measure procedure
Internal procedure INC_M rev. 8.1 (Quality Manual)	Measurement uncertainty calculation





9. Deviation from test specification

In agreement with the client, emission tests were performed with peak detector .

At the frequencies where the measures exceed the limit or within 6 dB from it, the test was repeated with quasi-peak detector and/or average detector.

10. Test case verdicts

Test case does not apply to the test object : N.A.

Test item does meet the requirement : Complies

Test item does not meet the requirement : Does not comply

Test not performed : N.E.

11. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 8.1.



11.1 Continuous disturbance voltage test (150 kHz – 30 MHz)

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part. 15.107
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Shielded chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S010, CMC S200, CMC S206

Measurement uncertainty: See clause 7 of this test report

Test specification

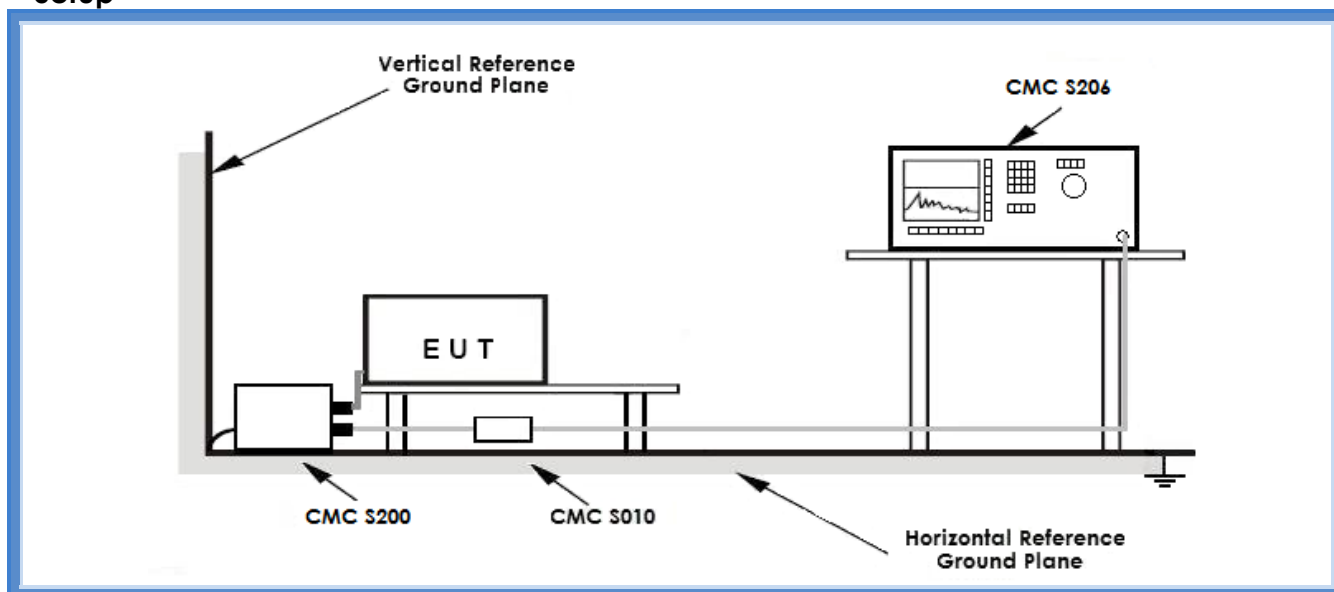
Port: Mains terminal
Frequency range: 150 kHz – 30 MHz
Class: B

Acceptance limits

Limits for class B equipment		
Frequency range (MHz)	dB(μV) Quasi-peak	dB(μV) Average
0,15 to 0,50	66 to 56	56 to 46
0,5 to 5	56	46
5 to 30	60	50



Setup



Result

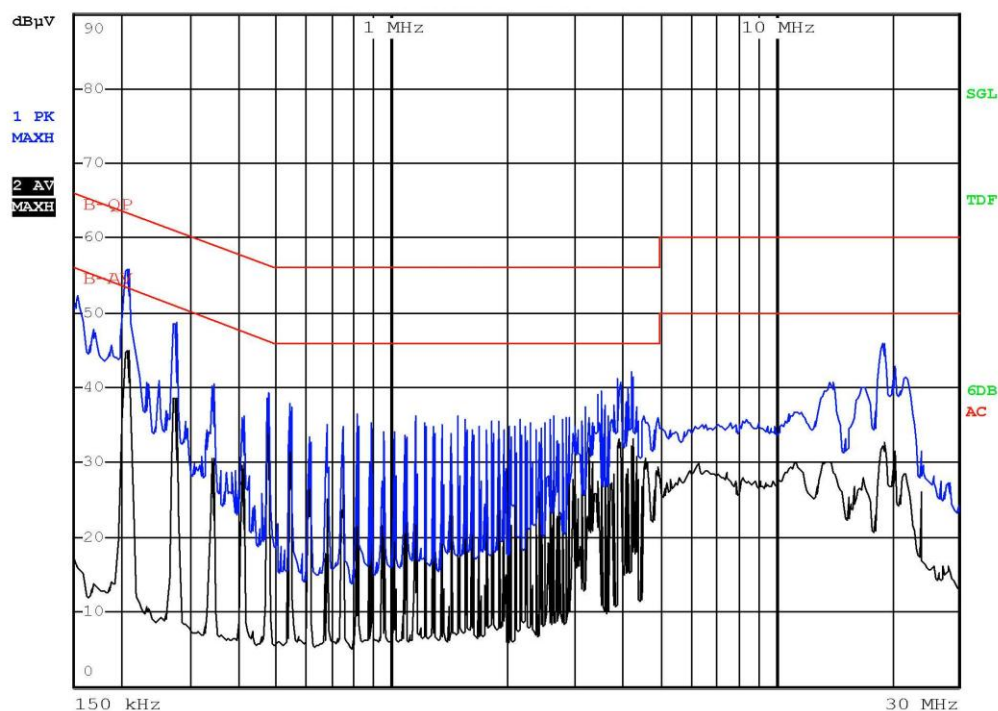
Line	Graphs	Remarks	Result
N	G13031004	--	Complies
L1	G13031005	--	Complies
Remarks: --			

Graphs Legend

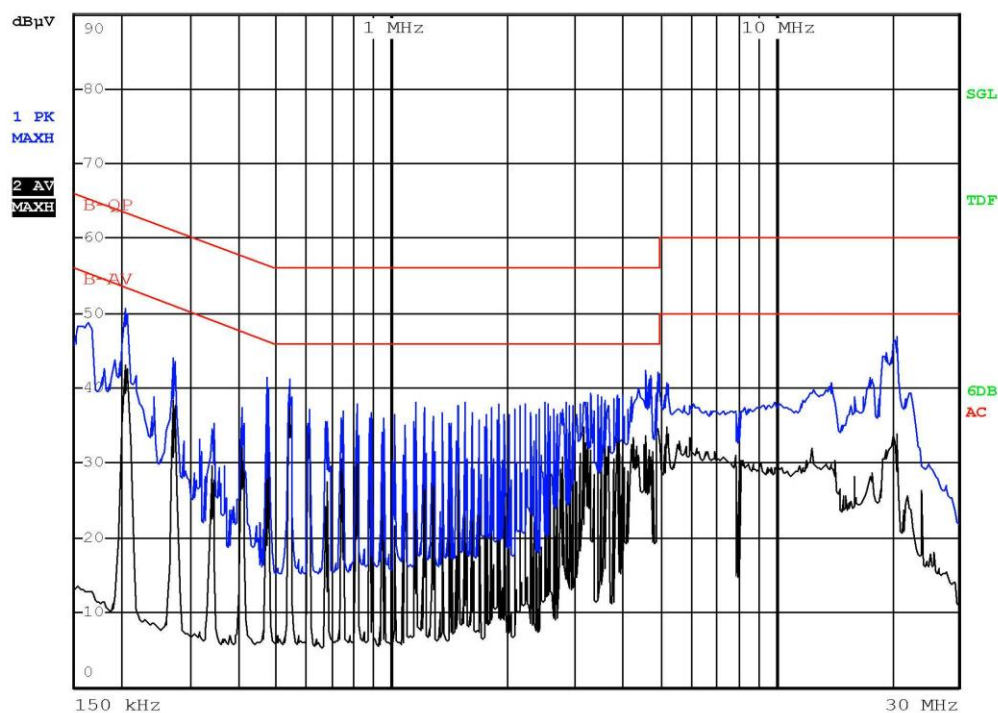
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a X



Graphs



Panozzo 13031004 Line N in funzione



Panozzo 13031005 Line L in funzione

Result: The requirements are met



11.2 Radiated disturbance test (30 – 1000 MHz)

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part. 15.109
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S108, CMC S136, CMC S164, CMC A013,
CMC A014
Measurement uncertainty: See clause 7 of this
test report

Test specification

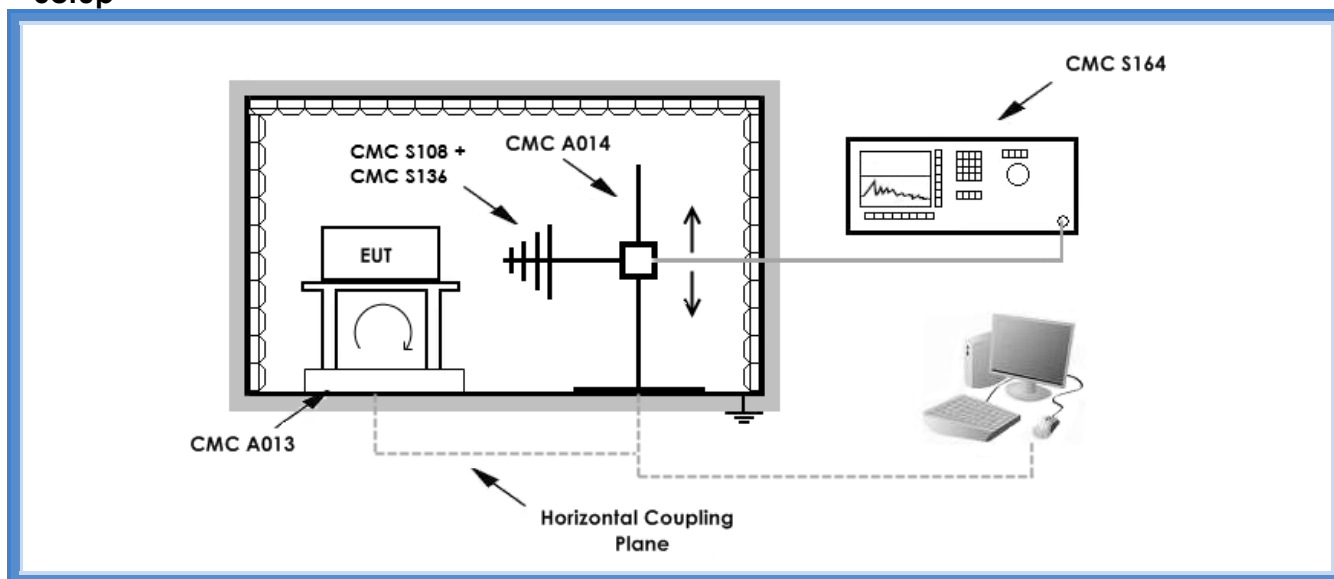
Port: Enclosure
Frequency range: 30 MHz – 1000 MHz
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 3 m
Class: B

Acceptance limits

Limits for class B equipment	
Frequency range (MHz)	Limits [dB(μV/m)]
30 to 88	40
88 to 216	43,52
216 to 960	46,02
960 to 1000	53,98



Setup



Result

Polarization	Frequency Range (MHz)	Graphs	Remarks	Result
V	30 – 1000	G13031001	--	Complies
H	30 – 1000	G13031002	--	Complies
Remarks: --				

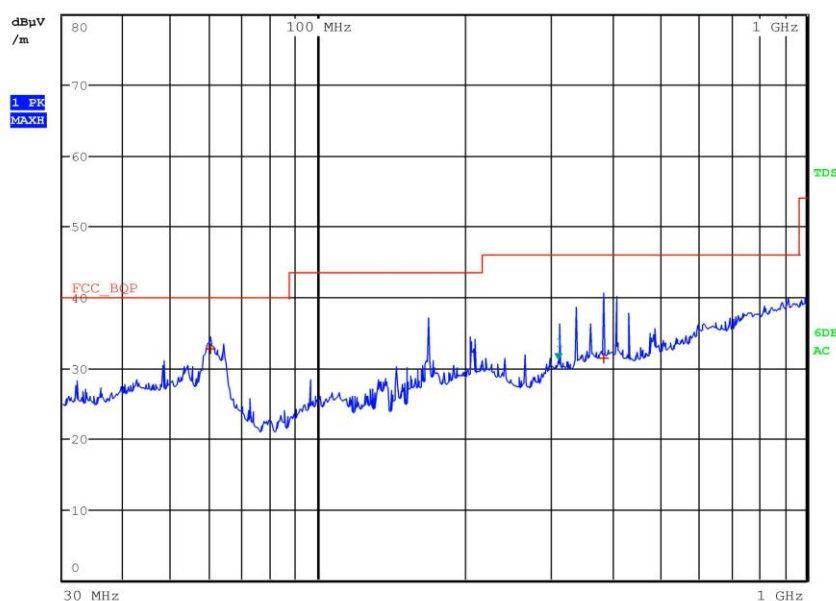
Graphs Legend

PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a x



Graphs

Meas Type Emissioni 30-1000MHz
Equipment under Test
Manufacturer
OP Condition In funzione con pc
Operator Panozzo 13031001
Test Spec
Vert.



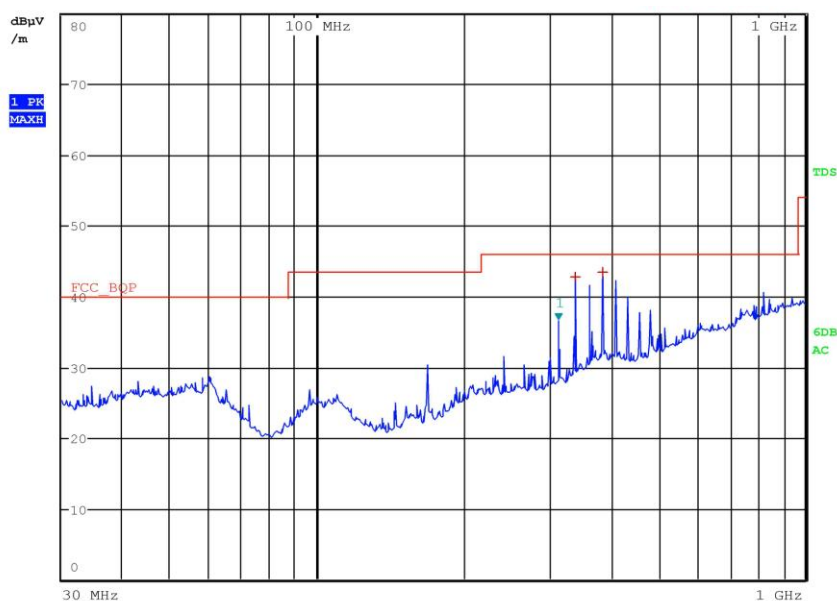
Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 2

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	60.280000000 MHz	32.69	Quasi Peak	-7.31
1	385.520000000 MHz	31.35	Quasi Peak	-14.67



Meas Type Emissioni 30-1000MHz
Equipment under Test
Manufacturer
OP Condition In funzione con pc
Operator Panozzo 13031002
Test Spec
Horiz.



Final Measurement

Meas Time: 1 s
Margin: 6 dB
Subranges: 2

Trace	Frequency	Level (dBμV/m)	Detector	Delta Limit/dB
1	337.360000000 MHz	42.73	Quasi Peak	-3.29
1	385.520000000 MHz	43.46	Quasi Peak	-2.56

Result: The requirements are met